CHECKLIST ENVIRONMENTAL ASSESMENT

Proposed Action: Approve Drilling Permit (Form 22)
Project/Well Name: Taylor LW 14-23 #4H
Operator: Kraken Operating LLC

Location: SE SW Section 11 T25N R58E
County: Richland **MT; Field (or Wildcat):** Wildcat

Proposed Project Date: 10/25/2019

I. DESCRIPTION OF ACTION

Kraken Operating LLC plans to drill a horizontal oil well in the Bakken Formation 20,982' MD, 10,389' TVD. Four other oil wells will be drilled on this pad, the Taylor LW 14-23 #1H, Taylor LW 14-23 #2H, Taylor LW 14-23 #3H, and Taylor LW 14-23 #5H.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED

Montana Bureau of Mines and Geology, GWIC website (Richland County Wells).

US Fish and Wildlife, Region 6 website
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County

Montana Natural Heritage Program Website (FWP)
Heritage State Rank= S1, S2, S3, T25N R58E

Montana Cadastral Website
Surface Ownership and surface use Section 11 T25N R58E

Montana Department of Natural Resources MEPA Submittal

2. ALTERNATIVES CONSIDERED

No Action Alternative: The proposed well would not be drilled.

Action Alternative: Kraken Operating LLC would have permission to drill the well.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

3. AIR QUALITY

Long drilling time: 8-10 days drilling time.
Unusually deep drilling (high horsepower rig): Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 20,982' MD, 10,389' TVD.

Possible H2S gas production: Yes, slight H2S possible from Mississippian Formations.
In/near Class I air quality area: No Class I air quality area nearby.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211. AQB review.

Comments: No special concerns – using triple derrick rig to drill to 20,982' MD, 10,389' TVD. If there are no gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Yes, will drill with oil based invert drilling fluids for the intermediate casing hole. Horizontal hole will be drilled with saltwater. Surface casing hole will be drilled with freshwater and freshwater mud system, Rule 36.22.1001.
High water table: No high-water table anticipated at this surface location.

Surface drainage leads to live water: No, the closest drainage is an unnamed ephemeral drainage about 1/5 of a mile to the north from this drilling location and leads to Fourmile Creek.

Water well contamination: None, surface hole will be drilled with freshwater and freshwater drilling fluids to 2,450', steel surface casing will be run and cemented to surface from 2,450' to protect any ground and surface waters. Closest water wells from this location is a stockwater well about 3/10 of a mile to the east and is 68' deep, a stockwater well is located about 3/5 of a mile to the southeast and is 282' deep, another stockwater well exists about ½ a mile to the southwest and is 300' deep, a stockwater well is located about ½ a mile to the southwest and is 310' deep.

Porous/permeable soils: No, sandy silty clay soils.
Class I stream drainage: Closest Class I stream drainage is the Missouri River, about 7 miles to the northeast from this location.
Groundwater vulnerability area: NA.

Mitigation:
__ Lined reserve pit
_X_Adequate surface casing
__ Berms/dykes, re-routed drainage
_X Closed mud system

_X_ Off-site disposal of **solids**/**liquids** (in approved facility)
___ Other:

Comments: Steel surface casing will be run to 2,450' and cemented to surface to protect ground water. (Rule 36.22.1001).

5. SOILS/VEGETATION/LAND USE

Vegetation: Grassland.
Steam crossings: No stream crossings anticipated. Crossing only ephemeral drainages over existing county roads.
High erosion potential: Possible high erosion potential on moderate cut and small fill slopes, a moderate cut of up to 20.8' and a small fill of up to 8.5', required.
Loss of soil productivity: No, location to be restored after drilling, if nonproductive. If productive, unused portion of this drillsite will be reclaimed.

Unusually large wellsite (Describe dimensions): A large well site 465' X 517' required for a five well pad, the Taylor LW 14-23 #1H, Taylor LW 14-23 #2H, Taylor LW 14-23 #3H, Taylor LW 14-23 #4H, and Taylor LW 14-23 #5H.
Damage to improvements: Slight surface use appears to be mix of cultivated and grass lands.
Conflict with existing land use/values: Slight.

Mitigation
__ Avoid improvements (topographic tolerance)
__ Exception location requested
_X_ Stockpile topsoil
__ Stream Crossing Permit (other agency review)
_X_ Reclaim unused part of wellsite if productive
__ Special construction methods to enhance reclamation

Access Road: Access will be over existing county road, #140. A new access of 145' will be built into location.

Drilling fluids/solids: A closed loop system will be used for this well. The liquids will be hauled to a commercial disposal site and disposed. The cuttings will also be hauled to a commercial disposal site and disposed.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: Nearest residence is about 1/2 a mile to the southwest.
Possibility of H2S: Yes, slight from Mississippian Formations.
Size of rig/length of drilling time: Triple derrick rig. 8-10 days drilling time.

Mitigation:
_X_ Proper BOP equipment (Adequate surface casing cemented to surface, Rule 36.22.1001, with working BOP stack should mitigate any problems, (5,000 psig annular and double ram), Rule 36.22.1014.)
__ Topographic sound barriers
__ H2S contingency and/or evacuation plan
__ Special equipment/procedures requirements
__ Other:

7. WILDLIFE/RECREATION

Sage Grouse: NA
Proximity to sensitive wildlife areas (DFWP identified): None identified.
Proximity to recreation sites: None identified.
Creation of new access to wildlife habitat: No.
Conflict with game range/refuge management: No.
Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane, Piping Plover, and the Northern Long-eared Bat. The Montana Natural Heritage Program lists three (3) species of concern: Whooping Crane, Northern Redbelly Dace, Iowa Darter.

Mitigation:
__ Avoidance (topographic tolerance/exception)
__Other agency review (DFWP, federal agencies, DNRC Trust Lands)
__ Screening/fencing of pits, drillsite
__ Other:

Comments: Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands. No concerns.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites: None identified.

Mitigation
__ avoidance (topographic tolerance, location exception)
__other agency review (SHPO, DNRC Trust Lands, federal agencies)

Other:

9. SOCIAL/ECONOMIC

Substantial effect on tax base
__ Create demand for new governmental services
__ Population increase or relocation

Comments: No concerns.

IV. SUMMARY

No long term impacts expected. Some short term impacts will occur, but can be mitigated.
I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

EA Checklist Prepared By:	**Name:**	John Gizicki	**Date:**	10/08/19
	Title:	Compliance Specialist		